CLAIM AMENDMENTS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A system comprising:

an optical signal source; and

an integrated circuit operatively coupled to the optical signal source, the integrated circuit including:

a substrate, and

a plurality of regions formed in the substrate and having refractive indices different from that of the substrate, each of the plurality of regions [[and]]separated by intervening areas of the substrate to form[[ing]] a grating, the grating having ~~a plurality of~~ grating periods with substantially constant pitch, wherein each ~~grating period~~ of the ~~plurality of~~ grating periods includes ~~a region~~ one of the plurality of regions and one of the intervening areas of the substrate, wherein consecutive ones of the plurality of regions have different widths and consecutive ones of the intervening areas have different widths; and ~~, the plurality of regions having regions of at least two different widths.~~

an optical path formed within the substrate passing through the plurality of regions and the intervening areas of the substrate.

2. (Original) The system of claim 1, wherein for each grating period of the plurality of grating periods, a grating period adjacent to that grating period has a region having a width is different from the width of that grating period's region.

3. (Original) The system of claim 1, wherein the plurality of regions are filled trenches formed in the substrate, the material filling the trenches being different from the material of the substrate.

4. (Original) The system of claim 1, wherein the plurality of regions is formed from polysilicon and the substrate is formed from crystalline silicon.

5. (Original) The system of claim 1, wherein the plurality of regions are formed proximate to a buried insulator layer of a silicon-on-insulator (SOI) wafer.

6. (Original) The system of claim 1, further comprising forming a cladding layer on the substrate and the plurality of regions.

7. (Currently Amended) The system of claim 1, wherein the optical path comprises a rib waveguide [[is]] formed in the substrate, the rib waveguide containing the plurality of regions.

8. (Original) The system of claim 1, wherein the substrate and the plurality of regions form a Bragg grating.

9. (Original) The apparatus of claim 8 wherein the waveguide Bragg grating has less than 1000 grating periods with an enhanced extinction ratio of more than 10 dB over non-apodized waveguide Bragg grating.

10. (Original) The system of claim 9, wherein the waveguide Bragg grating's Bragg wavelength is electronically tunable.

11. (Original) The system of claim 9, wherein the waveguide Bragg grating's Bragg wavelength is thermally tunable.

12. (Cancelled)

13. (Cancelled)

14. (Cancelled)

15. (Previously Presented) A method, comprising:

propagating an optical signal through a Xth region of a plurality of regions formed in a substrate, the plurality of regions having refractive indices different from that of the substrate, each of the plurality of regions separated by intervening areas of the substrate to form a grating, the grating having grating periods with substantially constant pitch, wherein each of the grating periods includes one of the plurality of regions and one of the intervening areas of the substrate, wherein consecutive ones of the plurality of regions have different widths and consecutive ones of the intervening areas have different widths; and

propagating the optical signal through a Yth intervening area of the intervening areas of the substrate, the Yth intervening area being adjacent to the Xth region of the plurality of regions formed in the substrate.

16. (Previously Presented) The method of claim 15, further comprising propagating the optical signal through a Zth region of the plurality of regions formed in the substrate, the Zth region being adjacent to the Yth intervening area.

17. (Previously Presented) The method of claim 16, wherein the plurality of regions comprise polysilicon-filled trenches formed in the substrate and wherein the substrate comprises a crystalline silicon substrate.